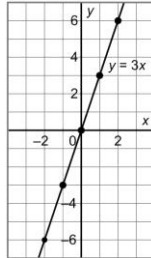


Page 171

10.

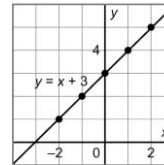
a) $y = 3x$

x	y
-2	-6
-1	-3
0	0
1	3
2	6



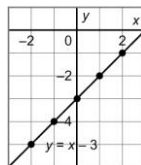
b) $y = x + 3$

x	y
-2	1
-1	2
0	3
1	4
2	5



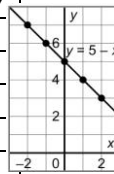
c) $y = x - 3$

x	y
-2	-5
-1	-4
0	-3
1	-2
2	-1



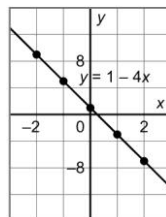
d) $y = 5 - x$

x	y
-2	7
-1	6
0	5
1	4
2	3



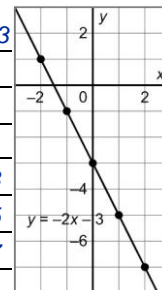
e) $y = 1 - 4x$

x	y
-2	9
-1	5
0	1
1	-3
2	-7



f) $y = -2x - 3$

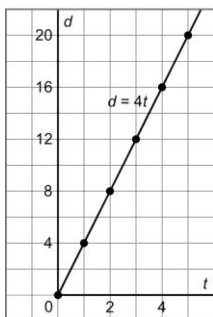
x	y
-2	1
-1	-1
0	-3
1	-5
2	-7

11. a) Jin travels d metres in $4 \times (t \text{ seconds})$.An equation is: $d = 4t$

b)

t	d
0	0
1	4
2	8
3	12
4	16
5	20

c) All the values between and beyond the plotted points are possible so I join the points with a straight line.



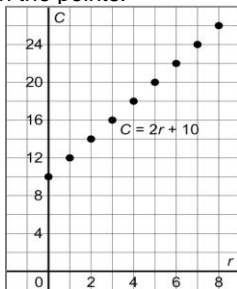
- d) Yes, the relation between distance and time is linear.
- i) From the table, as t increases by 1, d increases by 4. This relationship reflects constant change.
 - ii) From the graph, all the points lie on a straight line.
- e) Jin travels 4 m in 1 s, so he travels 60×4 m in 1 min, and $60 \times 60 \times 4$ m = 14 400 m in 1 h
 $14\,400\text{ m} = 14.4\text{ km}$
 So, in 3.5 h, Jin travels $3.5 \times 14.4\text{ km} = 50.4\text{ km}$.
- f) $17\text{ km} = 17\,000\text{ m}$
 Substitute $d = 17\,000$ in the equation $d = 4t$, then solve for t .
 $17\,000 = 4t$ Divide both sides by 4.
 $\frac{17\,000}{4} = \frac{4t}{4}$
 $4250 = t$
 $4250\text{ s} = 4250 \div 60\text{ min}$
 $= 4250 \div 60 \div 60\text{ h}$
 $\doteq 1.18\text{ h}$
 $\doteq 1\text{ h } 11\text{ min}$
 Jin takes about 1 h 11 min to travel 17 km.

Page 172

13. a) Let C represent the total cost in dollars and let r represent the number of rides.
 The admission fee is \$10 plus \$2 \times (number of rides, r). An equation is: $C = 10 + 2r$, or $C = 2r + 10$

- b) Create a table and graph the points.

r	C
0	10
1	12
2	14
3	16
4	18
5	20
6	22



The number of rides is a whole number. We cannot go on half a ride, or any other fraction of a ride.
 So, the points are not joined with a line; the data are discrete.

- c) Substitute $r = 7$ into the equation $C = 2r + 10$.

$$C = 2(7) + 10$$

$$= 24$$

7 rides cost \$24.

- d) Substitute $C = 38$ into the equation $C = 2r + 10$, then solve for r .

$$38 = 2r + 10$$

Subtract 10 from each side.

$$38 - 10 = 2r + 10 - 10$$

$$28 = 2r$$

Divide both sides by 2.

$$\frac{28}{2} = \frac{2r}{2}$$

$$14 = r$$

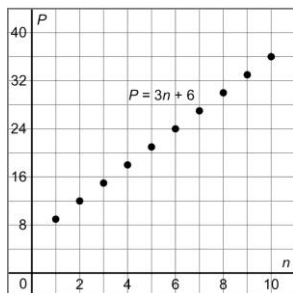
14 rides can be taken for \$38.

14. a) In the equation $P = 3n + 6$, P represents the total number of pieces of pizza needed and n represents the number of people attending the party. Danica estimates that each person will eat 3 pieces of pizza, that is $3n$. The 6 extra pieces are represented by 6.

b)

n	P
1	9
2	12
3	15
4	18
5	21
6	24
7	27
8	30
9	33
10	36

c)



Since the number of people attending cannot include values between those given in the table, I will not join the points.

- d) Yes, the relation is linear.

i) From the table of values, as n increases by 1, P increases by 3. This relationship is constant.

ii) From the graph, all the plotted points lie on a straight line.

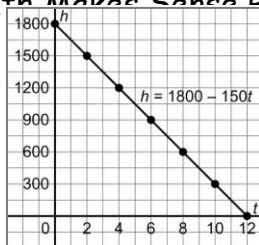
- e) Since the relation is linear, as the number of people attending increases by 1, the number of pieces of pizza needed increases by 3.

15. a) Let h represent the height in metres and t represent the time in minutes. The height decreases 150 m every minute, so, after t minutes, the height will be $1800 - 150t$. An equation is: $h = 1800 - 150t$

- b) Create a table of values then plot the points on a graph.

t	h
-----	-----

0	1800
2	1500
4	1200
6	900
8	600
10	300
12	0



All the values between the plotted points are possible so I join the points with a straight line.

- c) Substitute $t = 6$ in the equation $h = 1800 - 150t$.

$$\begin{aligned} h &= 1800 - 150(6) \\ &= 1800 - 900 \\ &= 900 \end{aligned}$$

The height of the plane 6 min after it began its descent is 900 m.

- d) Substitute $h = 100$ in the equation $h = 1800 - 150t$, then solve for t .

$$100 = 1800 - 150t \quad \text{Subtract 1800 from each side.}$$

$$100 - 1800 = 1800 - 150t - 1800$$

$$-1700 = -150t$$

Divide each side by -150 .

$$\frac{-1700}{-150} = \frac{-150t}{-150}$$

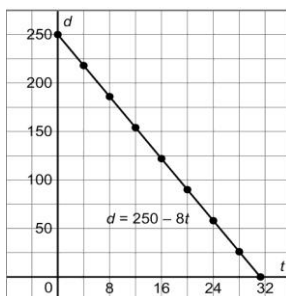
$$11.\bar{3} = t$$

The plane is 100 m above the ground at $11.\bar{3}$ min after starting to descend. This is, after 11 min 20 s.

16. a) Let t represent the time in hours and d represent the distance left to travel. Jada travels 8 km/h, or $8 \times t$. So, the distance after t hours is $250 - 8t$; an equation is: $d = 250 - 8t$

- b) Create a table of values then plot the points on a graph.

t	d
0	250
4	218
8	186
12	154
16	122
20	90
24	58
28	26
32	0



All the values between the plotted points are possible so I join the points with a straight line.

- c) Substitute $t = 12$ in the equation $d = 250 - 8t$.

$$\begin{aligned} d &= 250 - 8(12) \\ &= 250 - 96 \\ &= 154 \end{aligned}$$

Jada has 154 km to travel after 12 h.

- d) Jada will have completed her trip when the distance she has yet to travel is 0 km. Substitute $d = 0$ in the equation $d = 250 - 8t$, then solve for t .

$$0 = 250 - 8t \quad \text{Subtract 250 from each side.}$$

$$0 - 250 = 250 - 8t - 250$$

$$-250 = -8t \quad \text{Divide each side by } -8.$$

$$\frac{-250}{-8} = \frac{-8t}{-8}$$

$$31.25 = t$$

It will take Jada 31.25 h, or 31 h 15 min to complete the trip.